FIG 1A

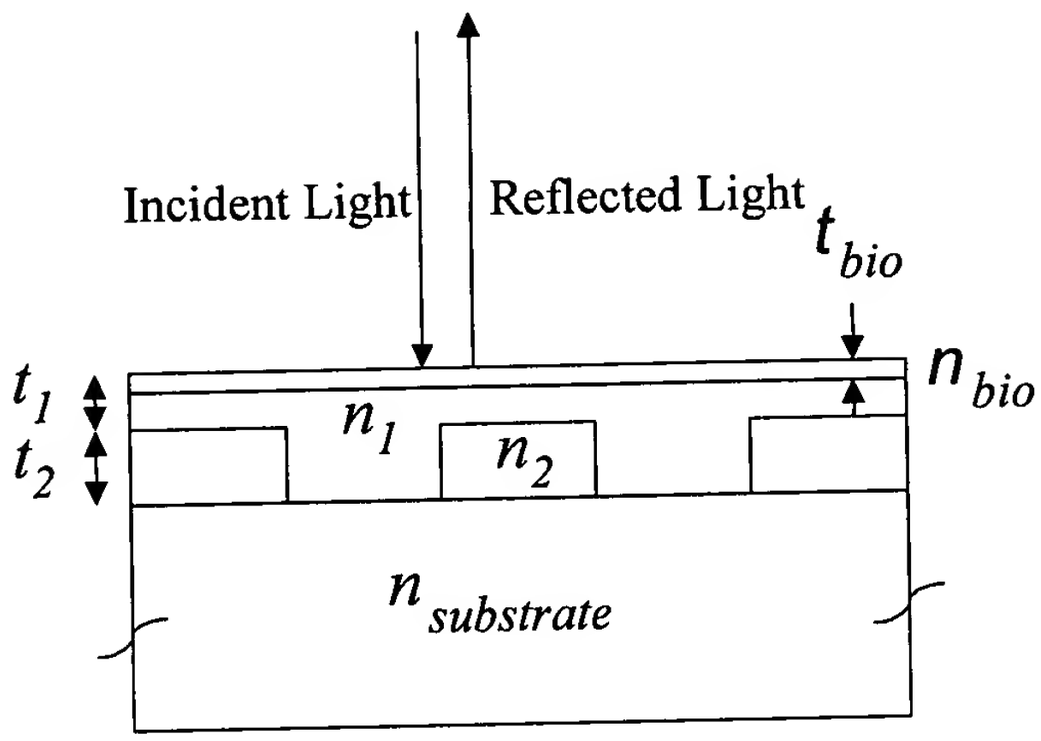


FIG. 1B

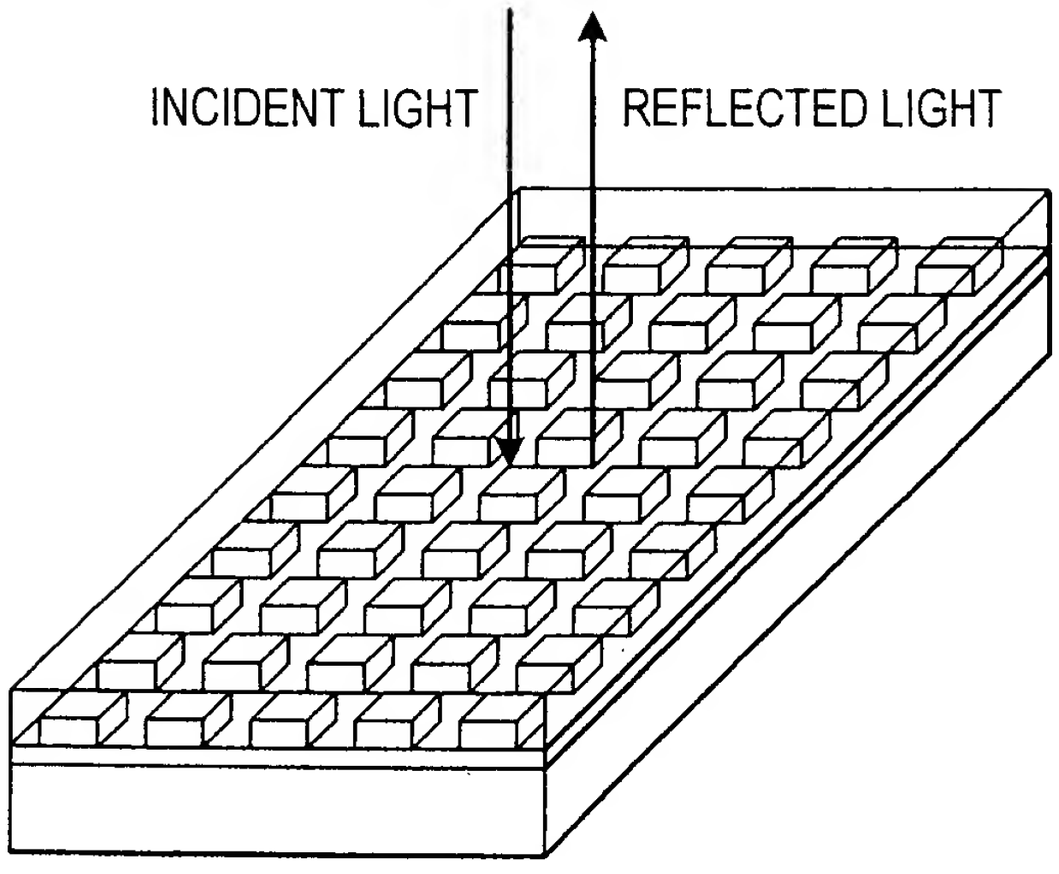


FIG. 2

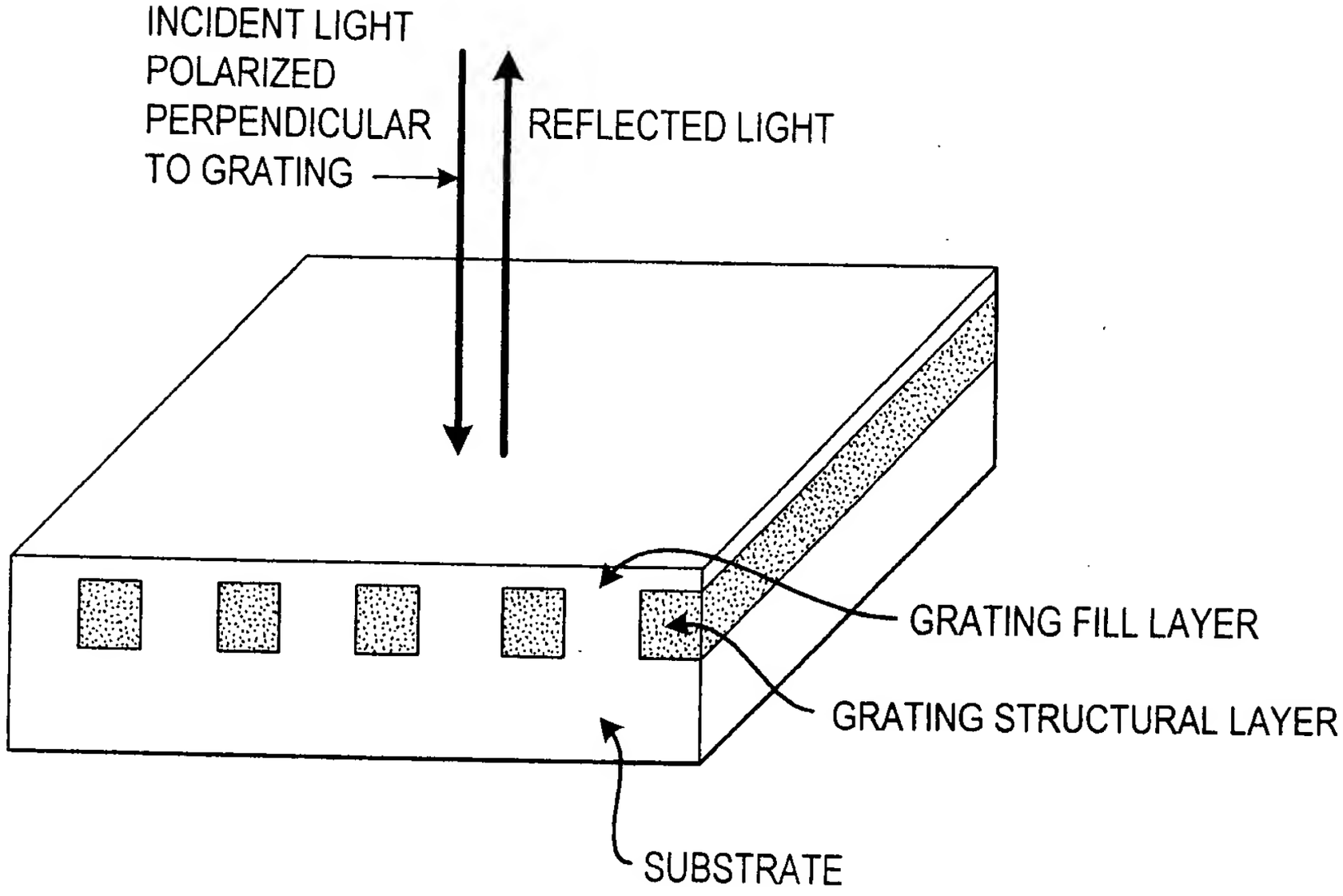

INCIDENT LIGHT
POLARIZED
PERPENDICULAR
TO GRATING
REFLECTED LIGHT
GRATING FILL LAYER
GRATING STRUCTURAL LAYER
SUBSTRATE

FIG. 5

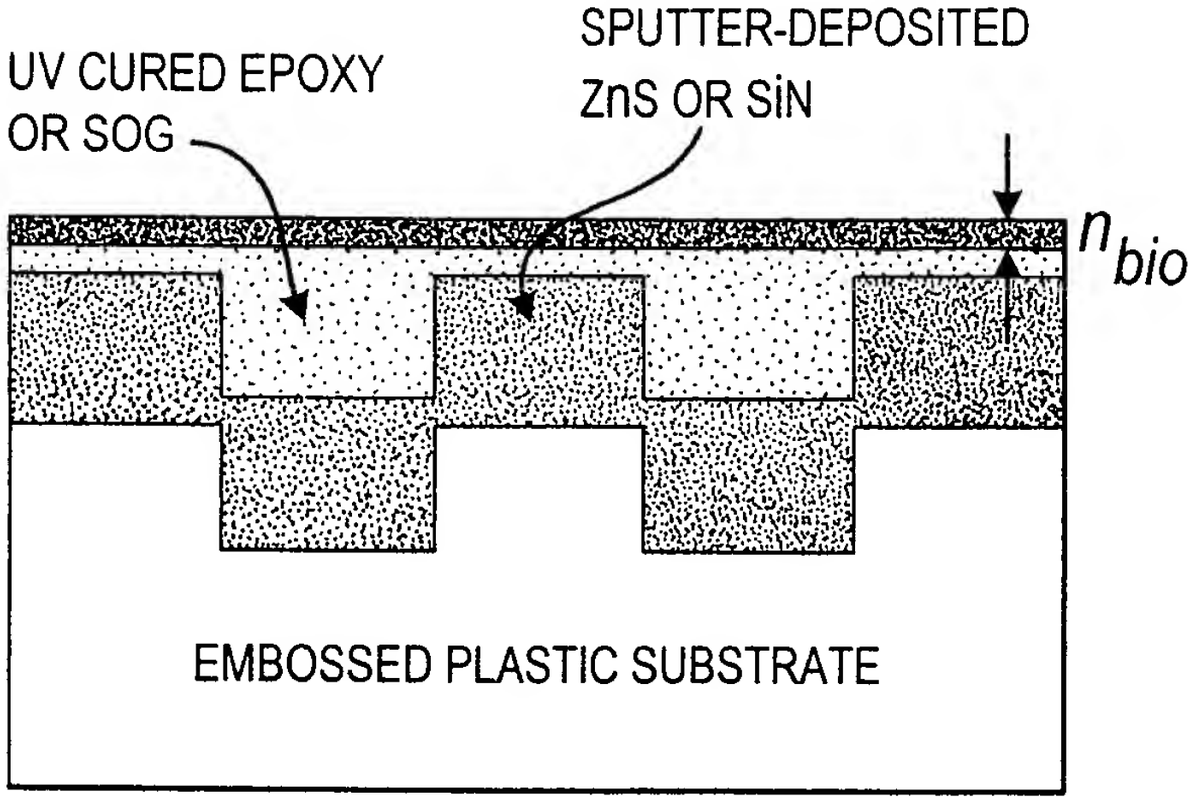

SPUTTER-DEPOSITED
UV CURED EPOXY
OR SOG
ZnS OR SiN
n_{bio}
EMBOSSED PLASTIC SUBSTRATE

FIG. 9

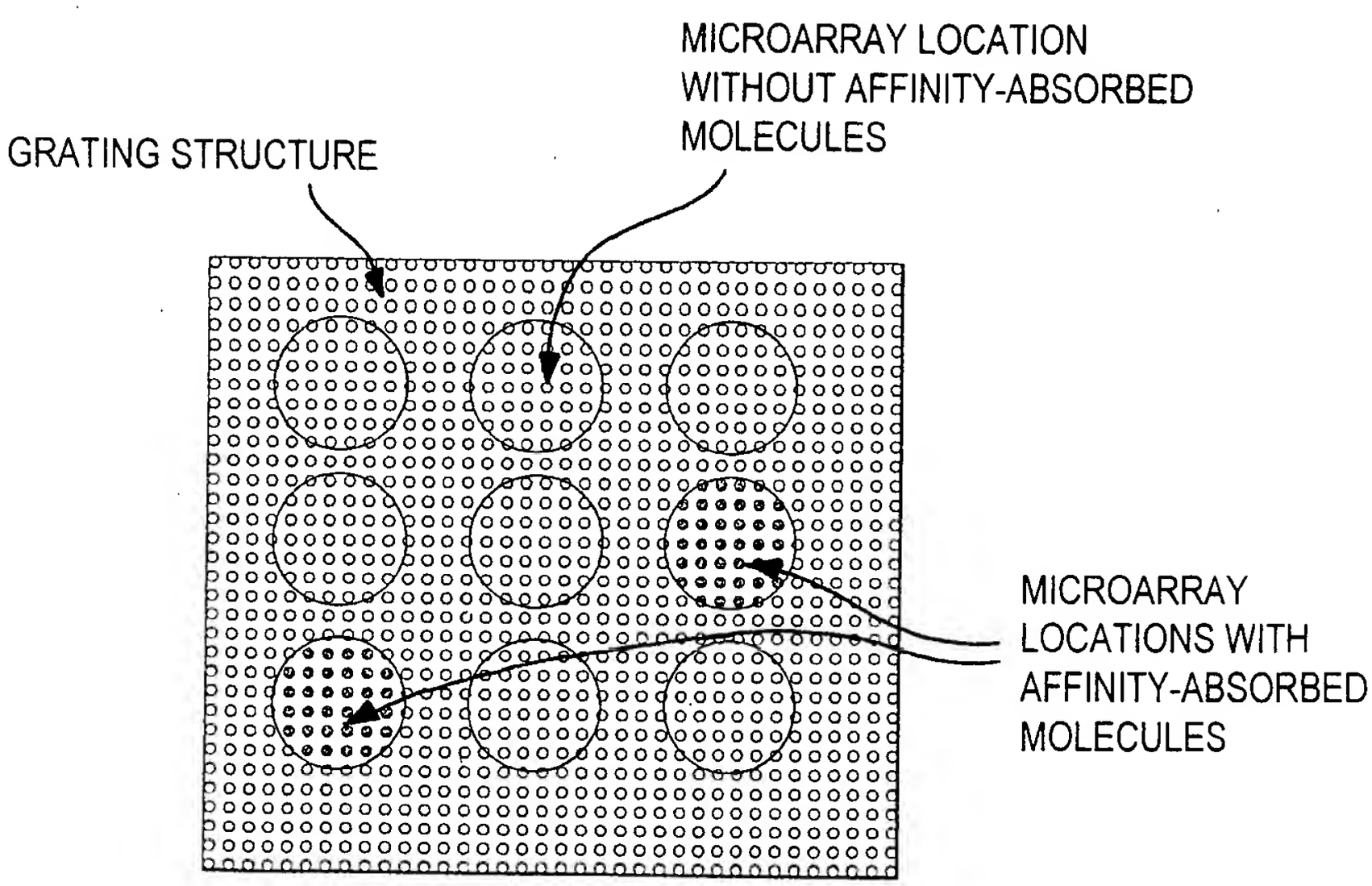

MICROARRAY LOCATION
WITHOUT AFFINITY-ABSORBED
MOLECULES
GRATING STRUCTURE
MICROARRAY
LOCATIONS WITH
AFFINITY-ABSORBED
MOLECULES

FIG. 10A

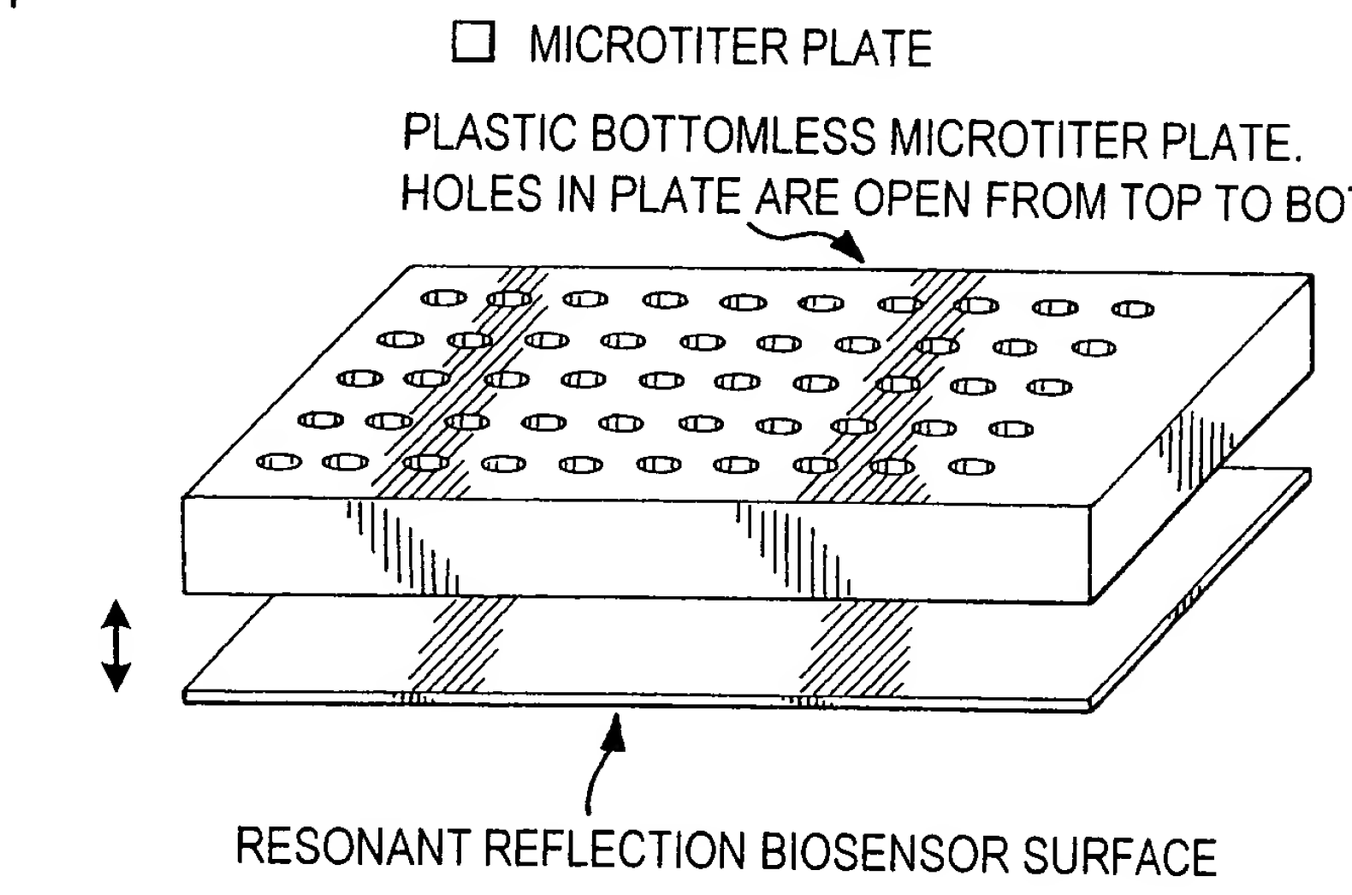


FIG. 10B

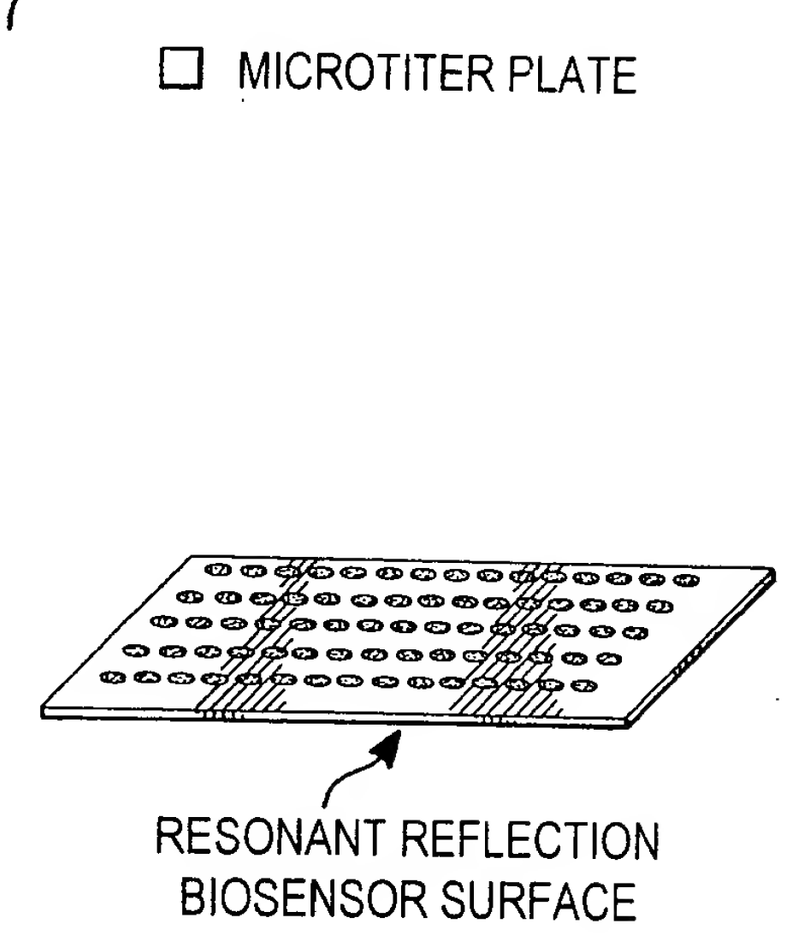
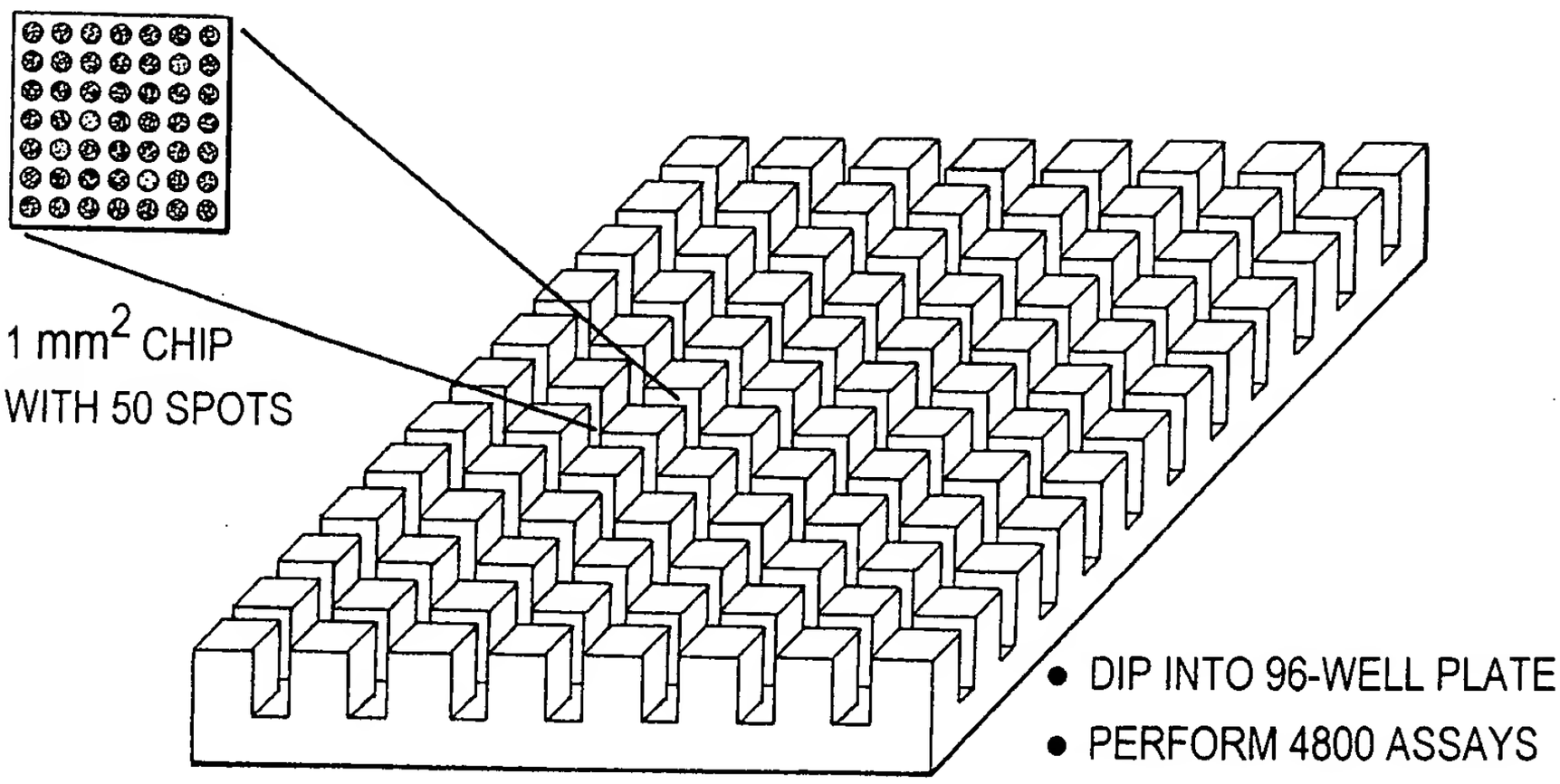


FIG. 11


1 mm^2 CHIP
WITH 50 SPOTS
• DIP INTO 96-WELL PLATE
• PERFORM 4800 ASSAYS

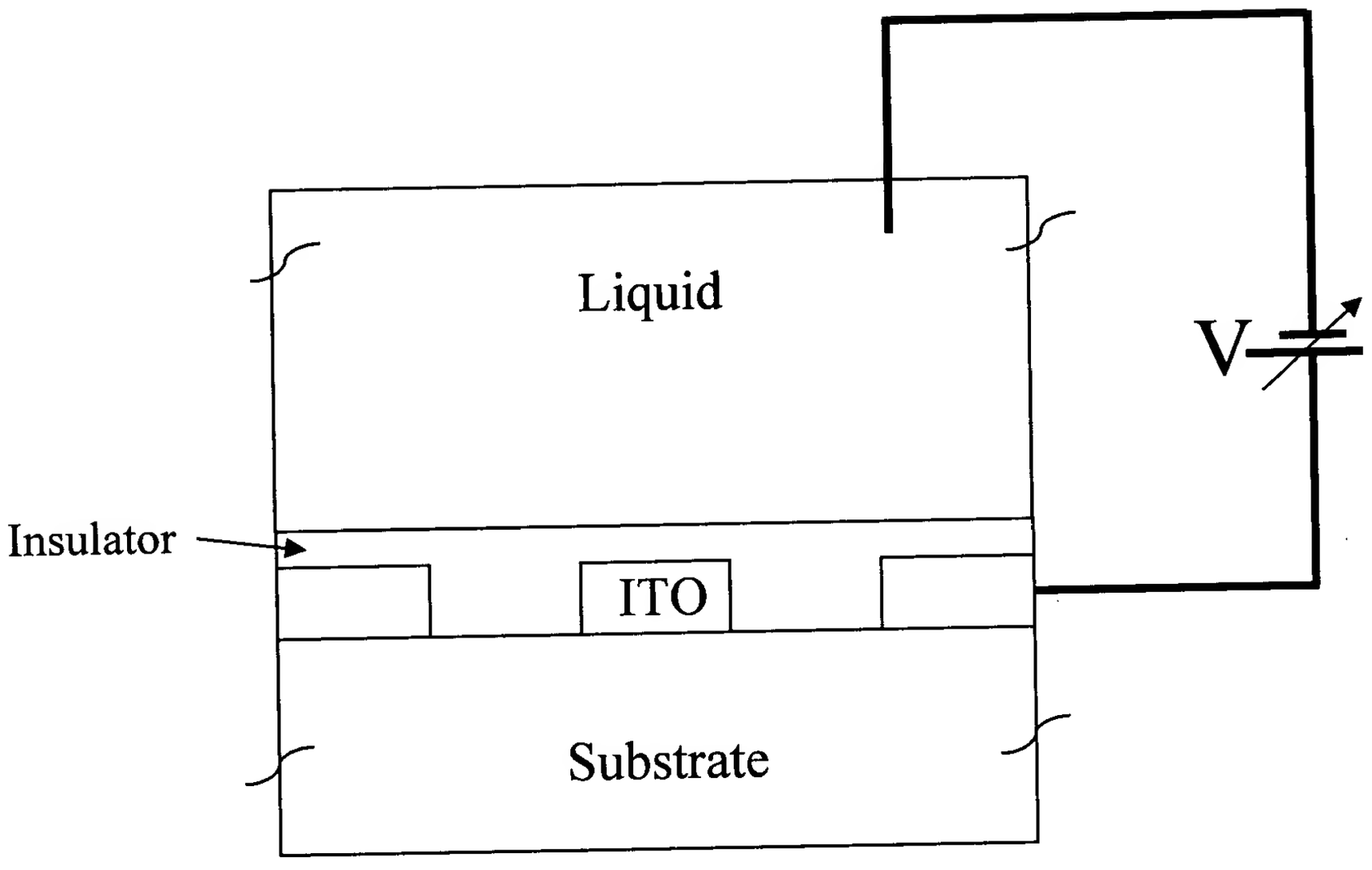


Figure 14

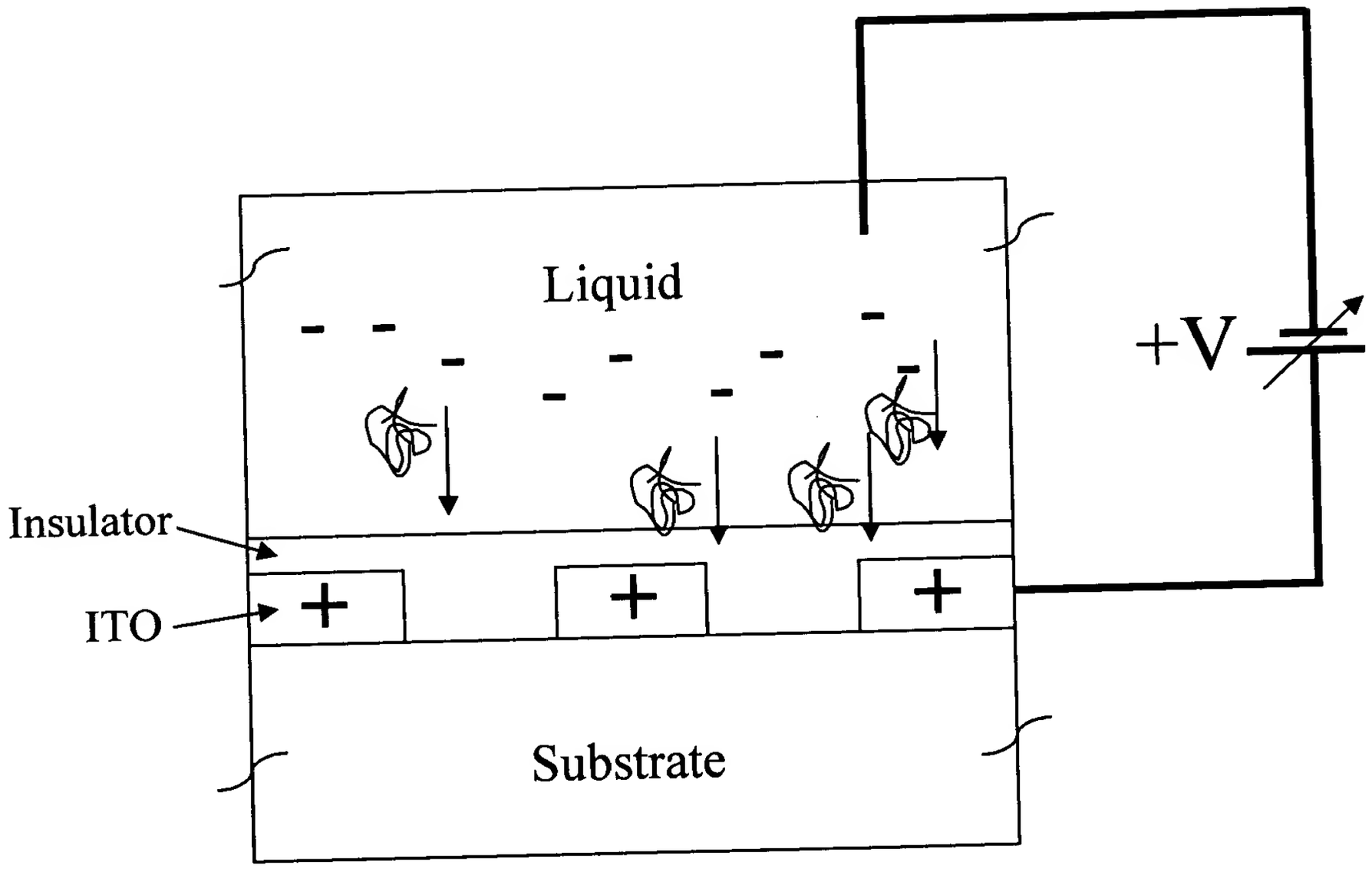


Figure 15

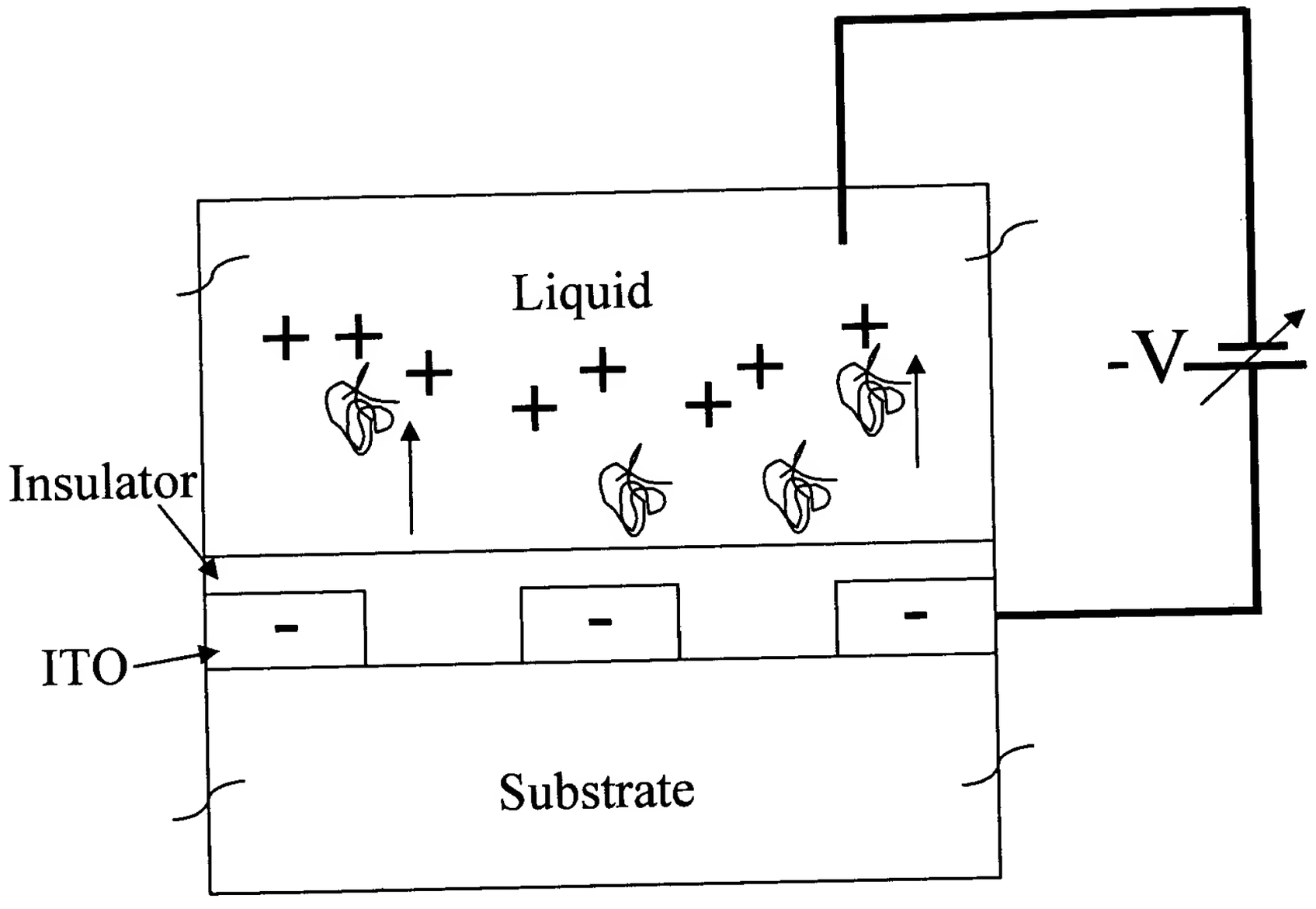
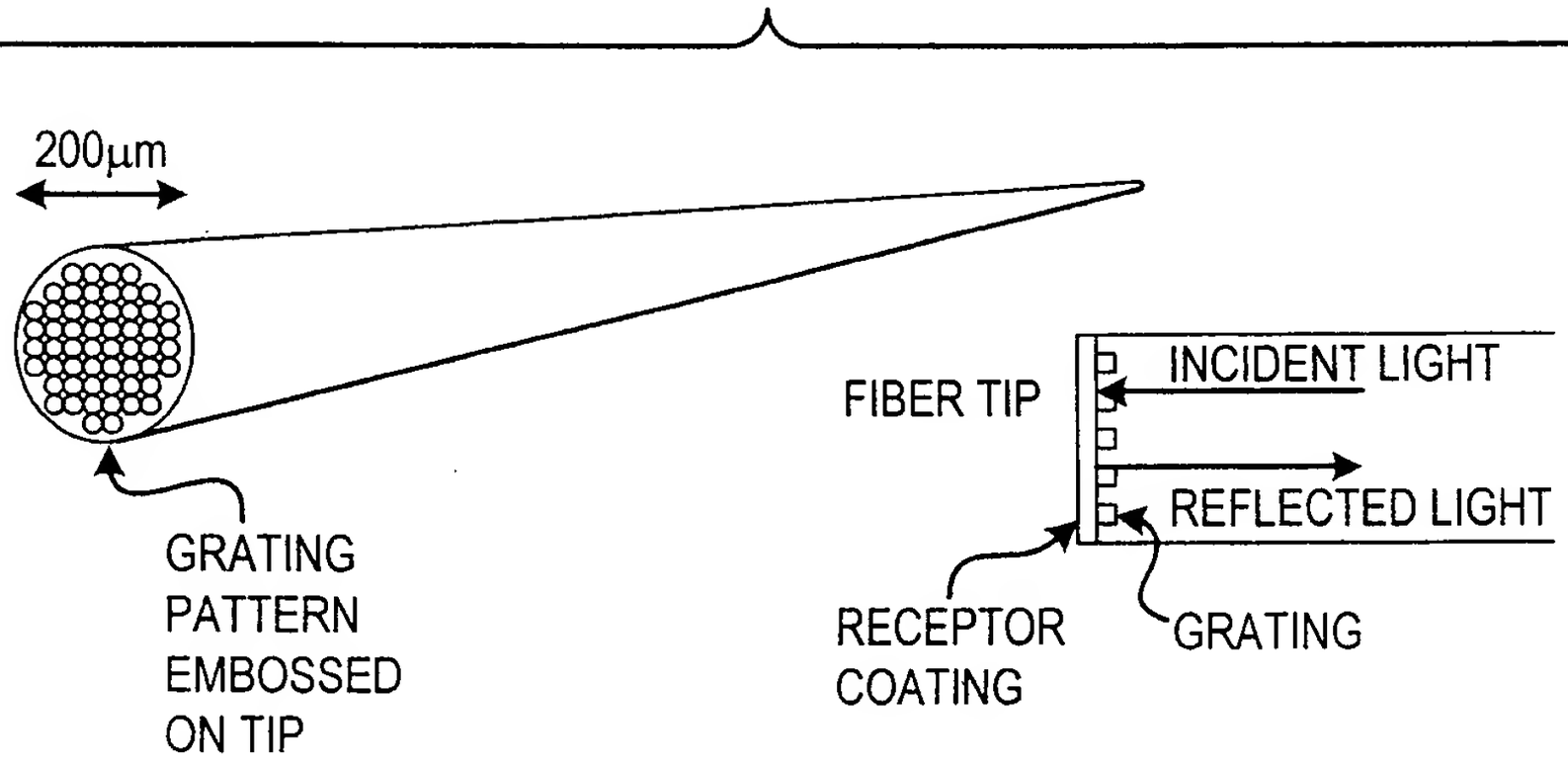


Figure 16

FIG. 17


200μm
GRATING
PATTERN
EMBOSSED
ON TIP
FIBER TIP
INCIDENT LIGHT
REFLECTED LIGHT
RECEPTOR
COATING
GRATING

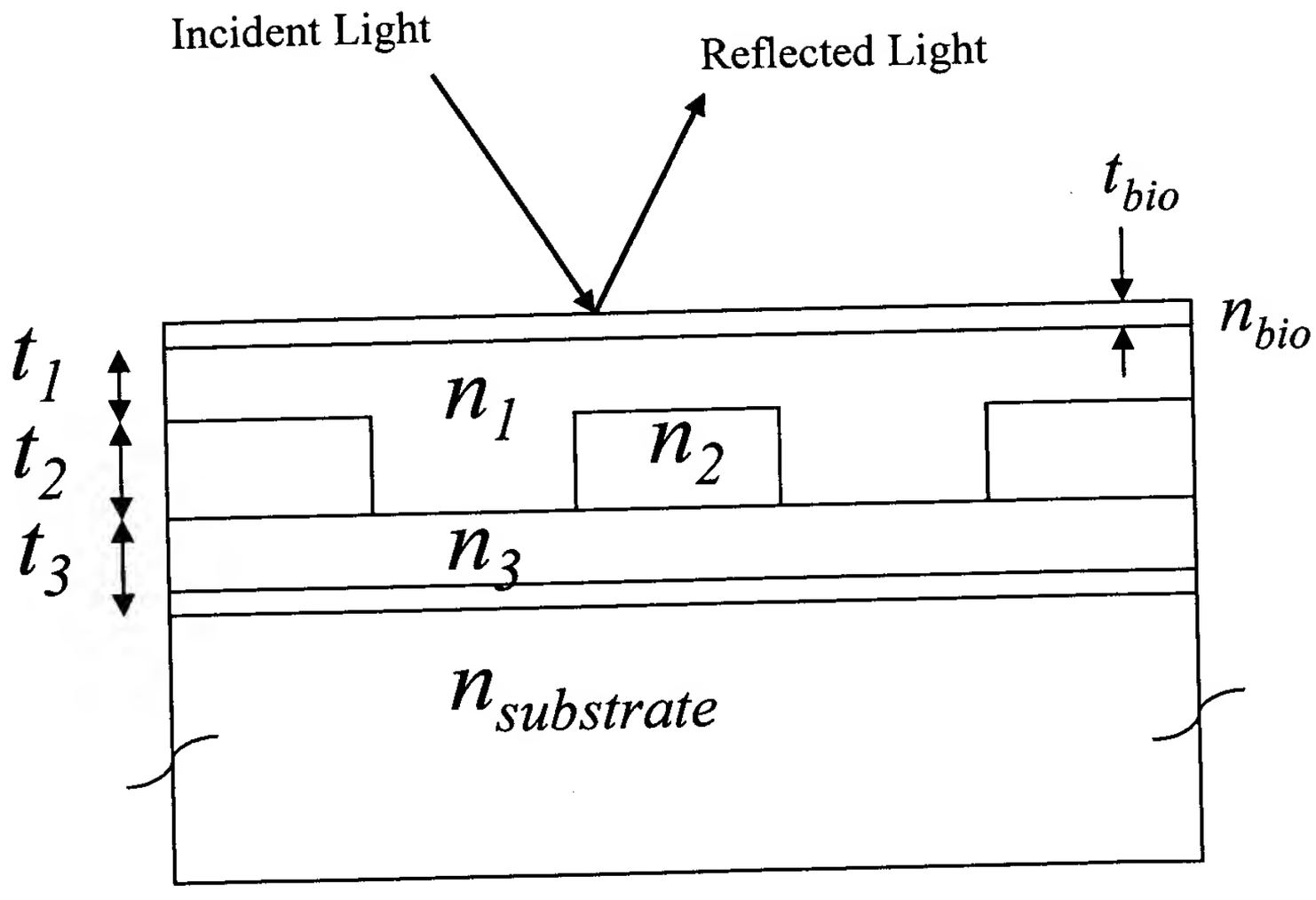

Incident Light
Reflected Light
t_{bio}
n_{bio}
t_1
t_2
t_3
n_1
n_2
n_3
$n_{substrate}$

Figure 30

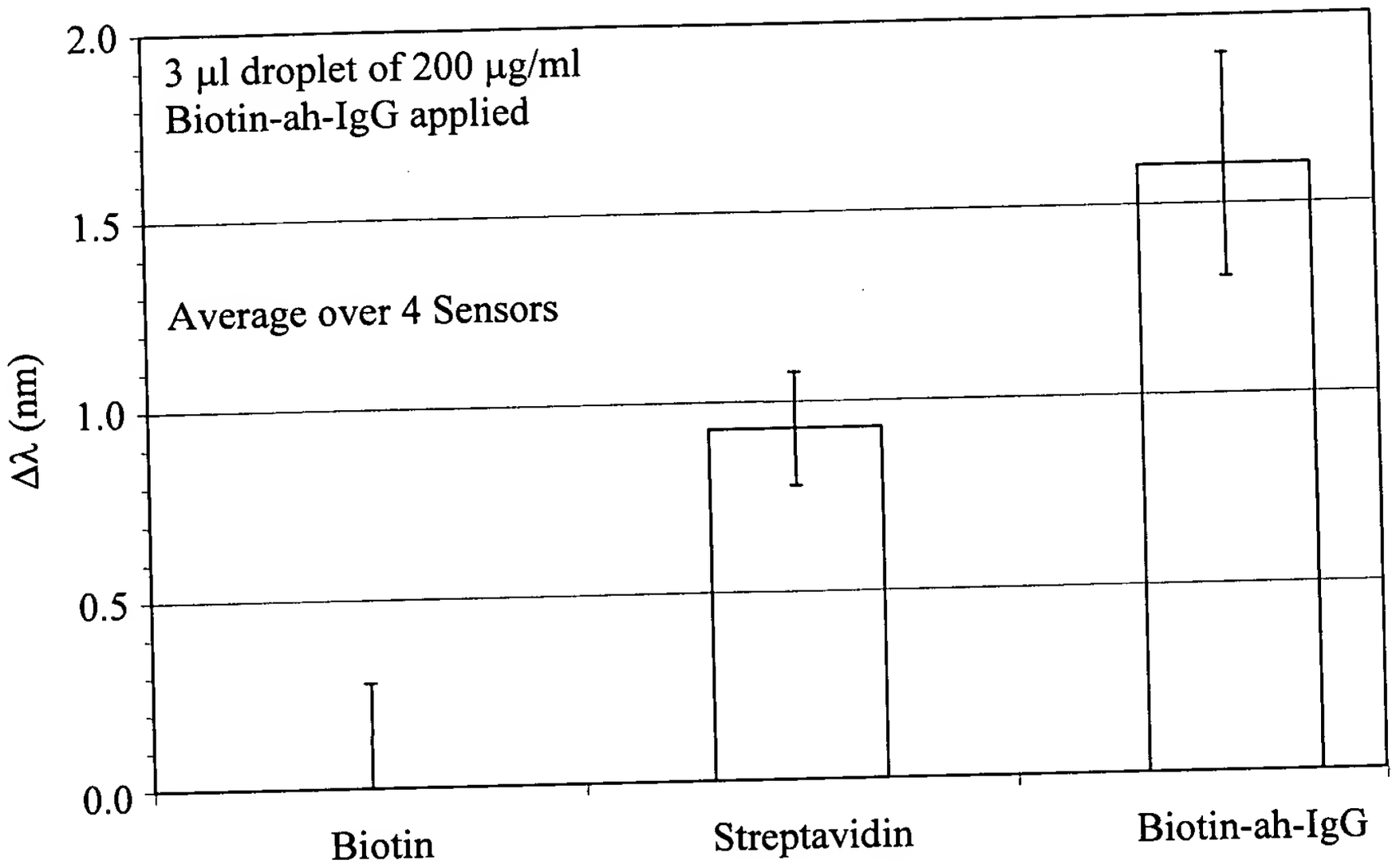


Figure 37A

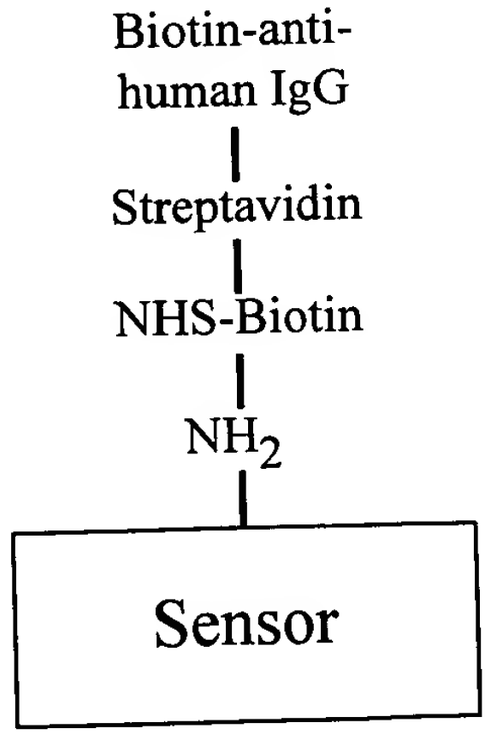


Figure 37B

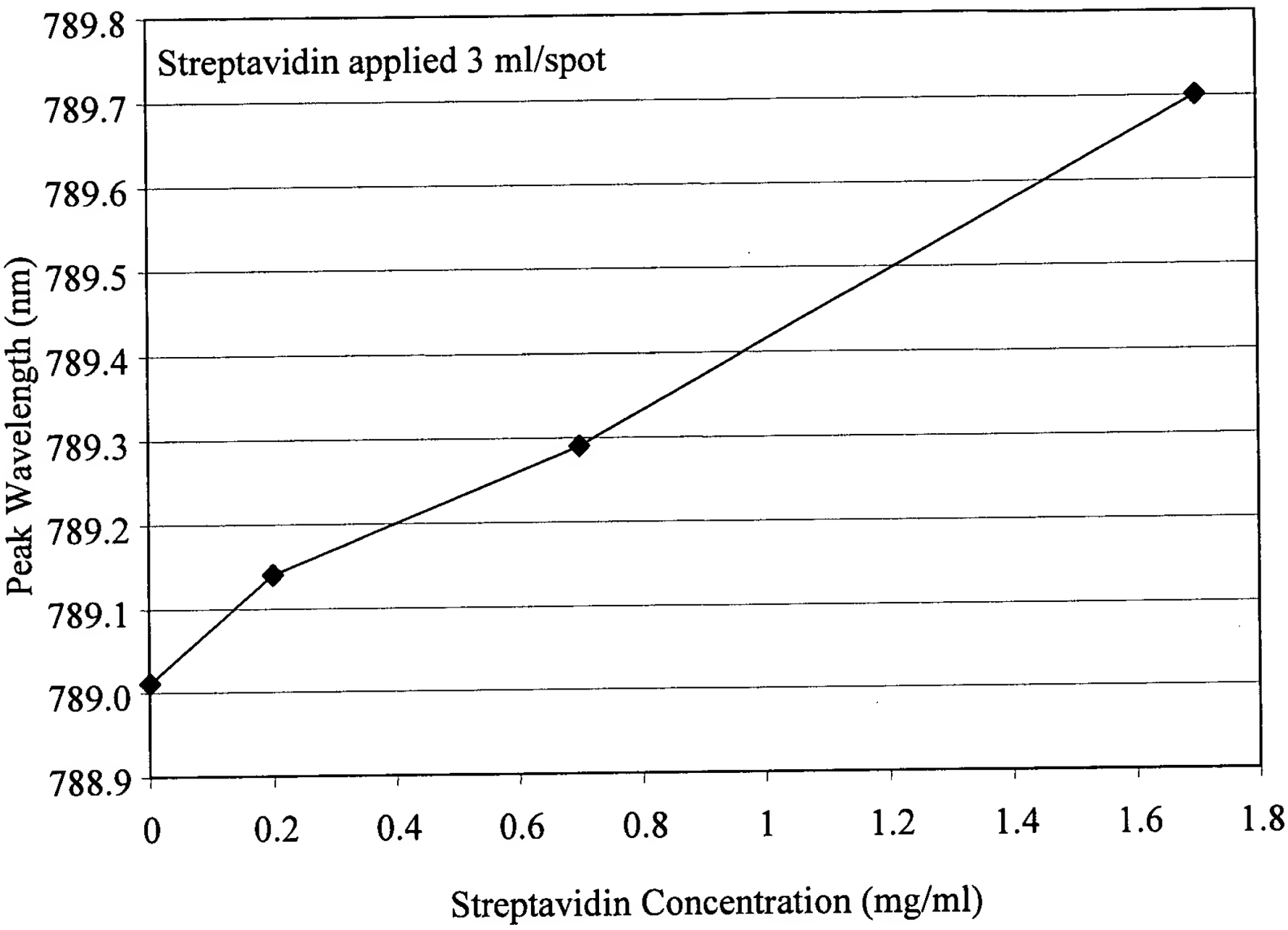


Figure 38A

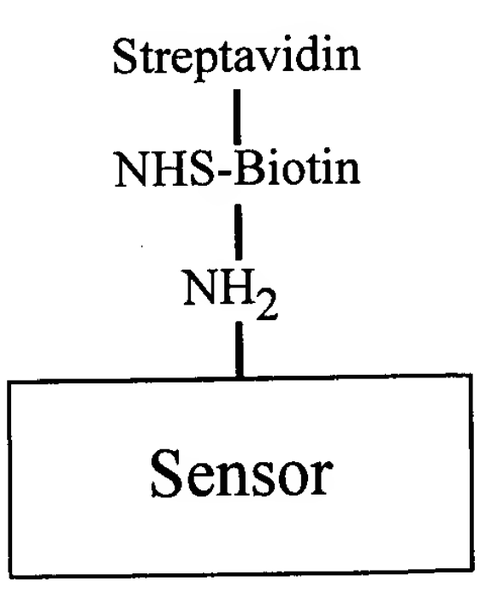


Figure 38B

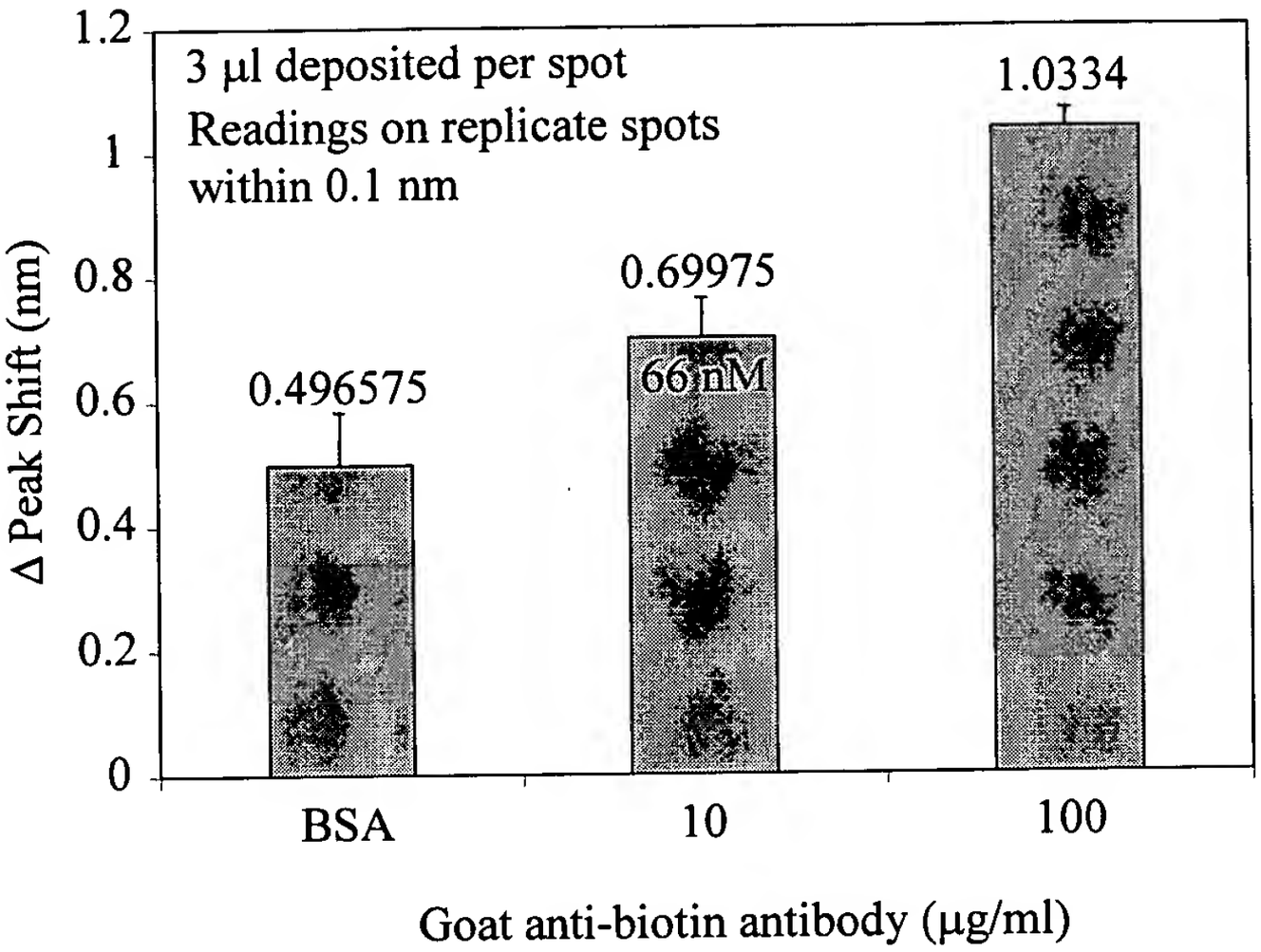


Figure 39A

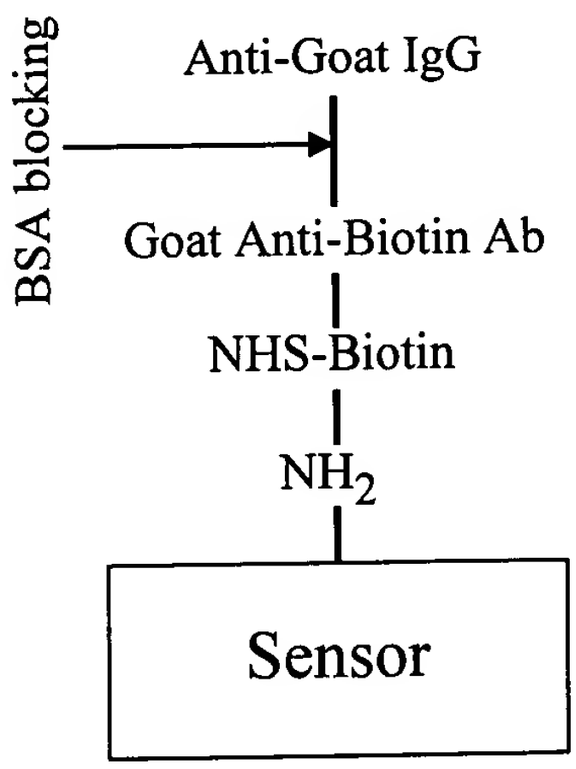


Figure 39B

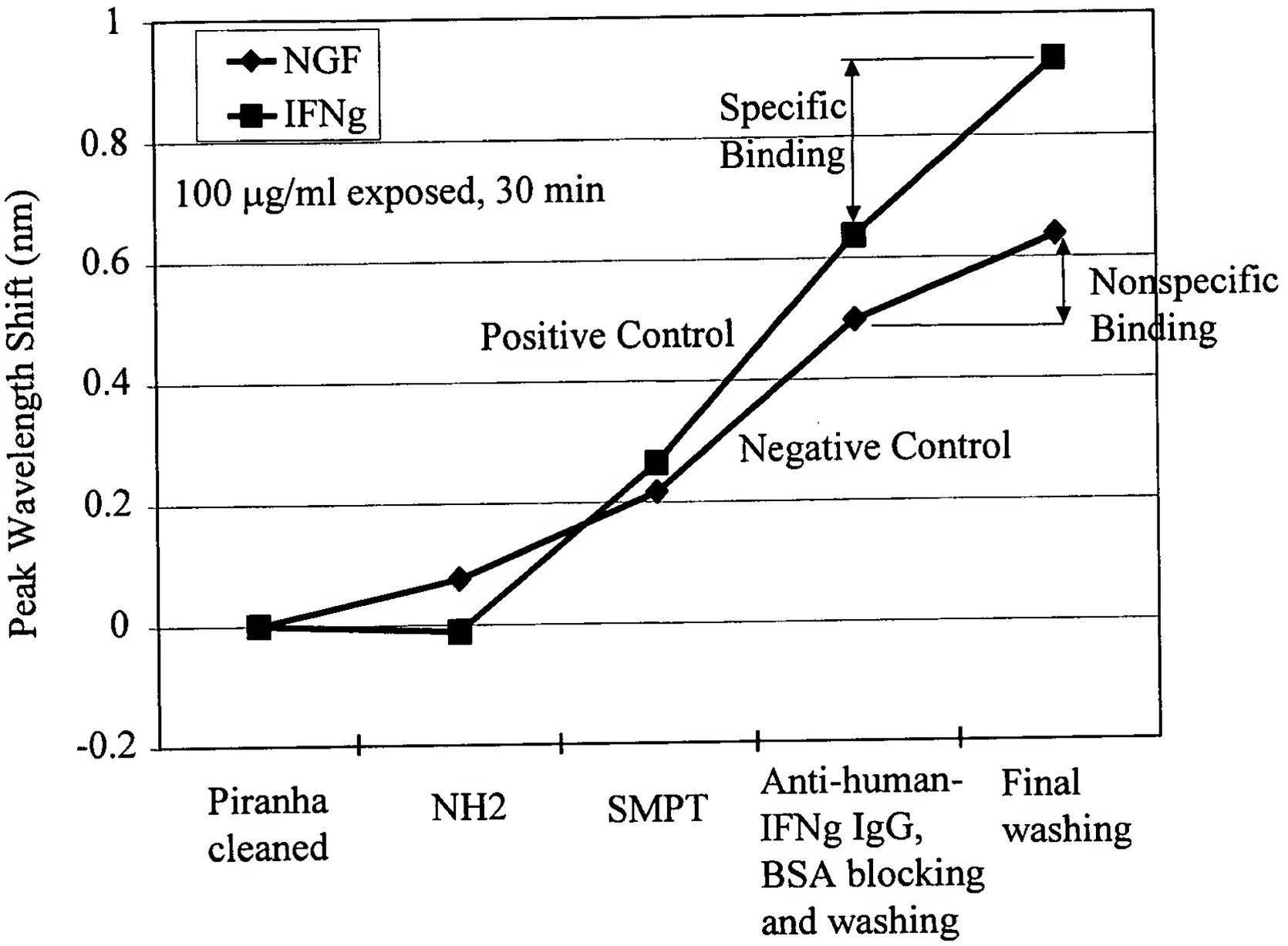


Figure 40A

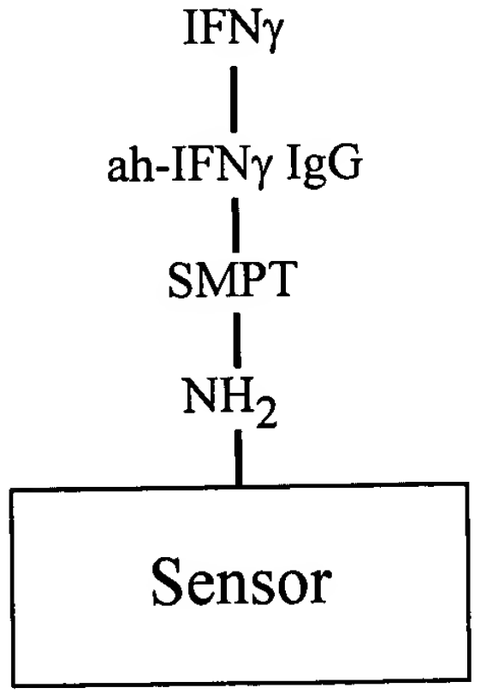


Figure 40B

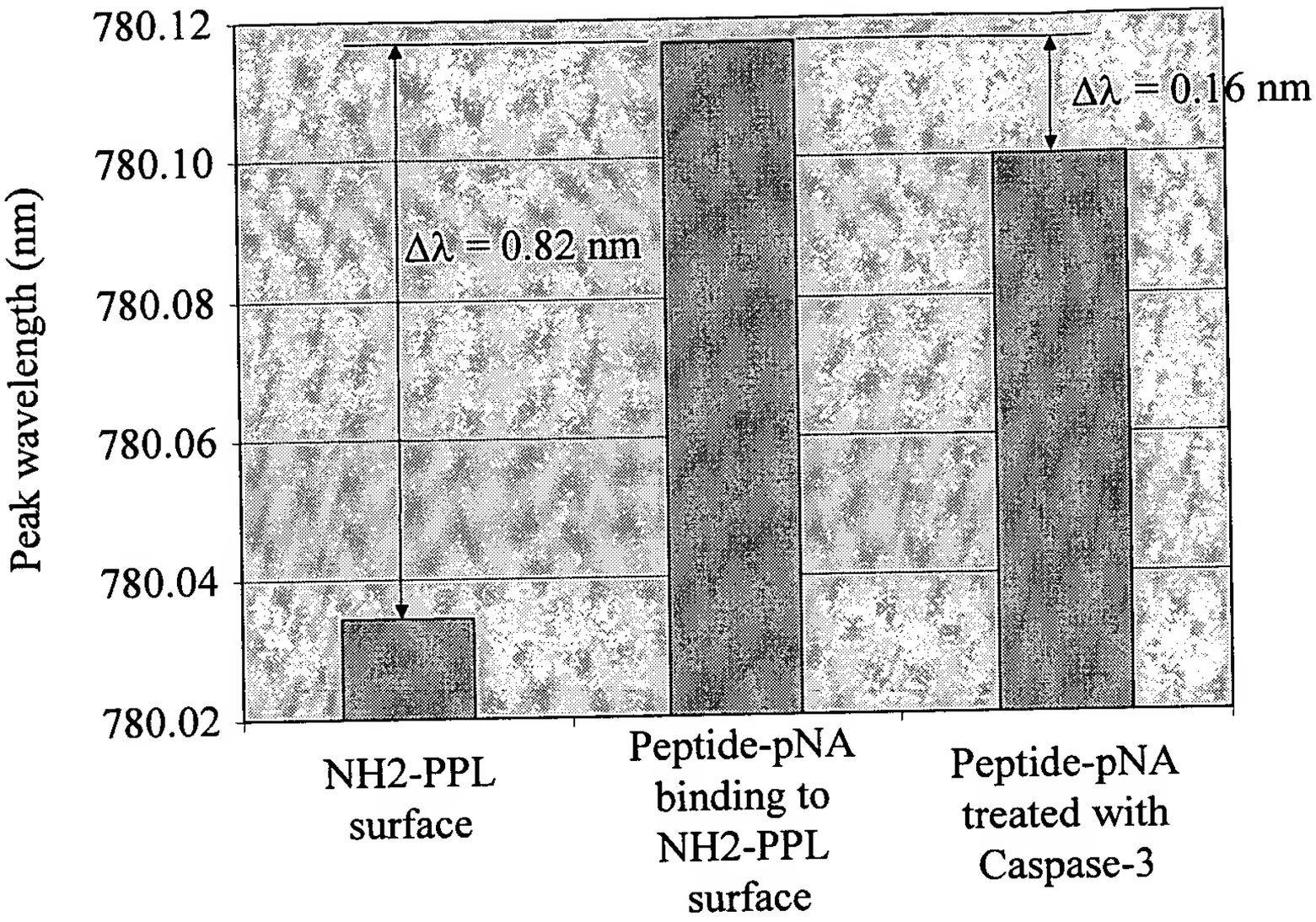


Figure 41A

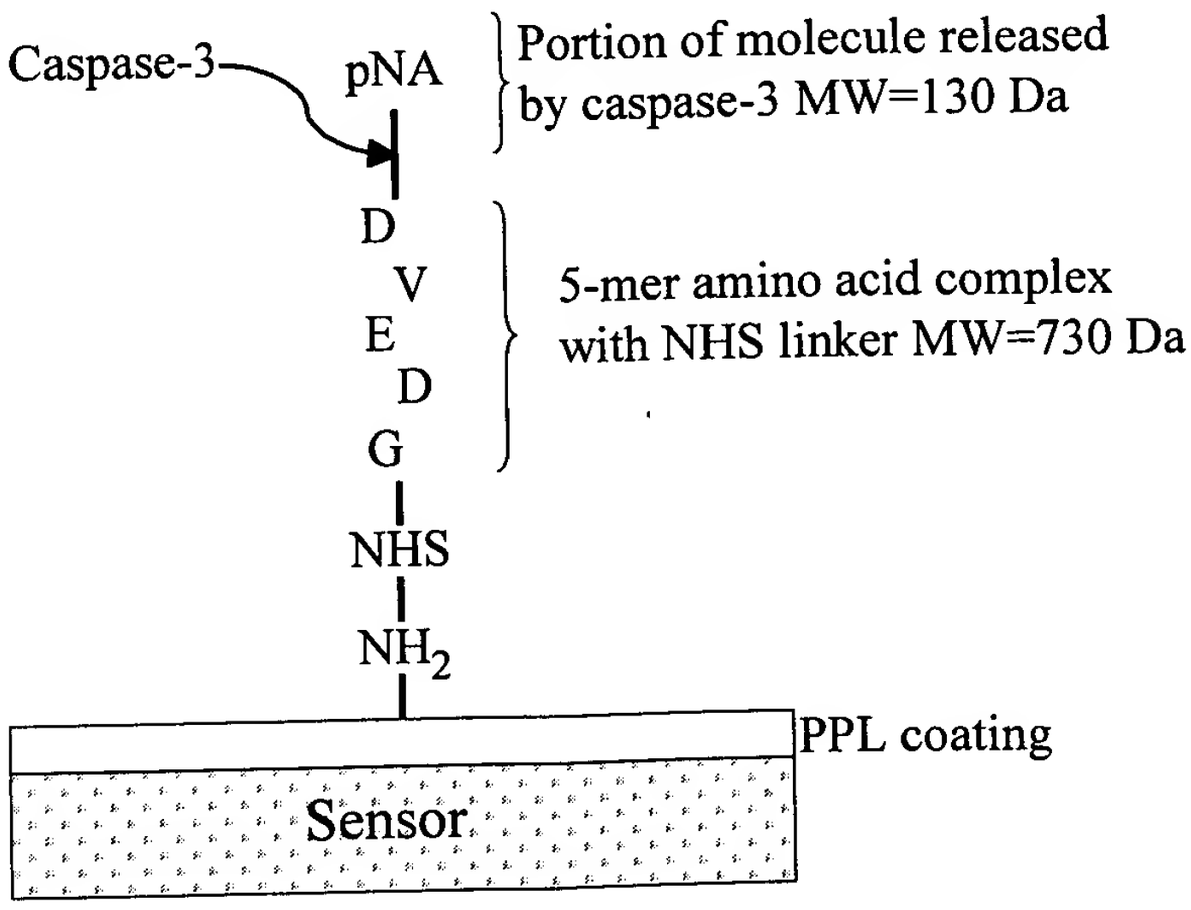


Figure 41B

Measured shifting of the resonant wavelength caused by the binding of various biomolecular layers.

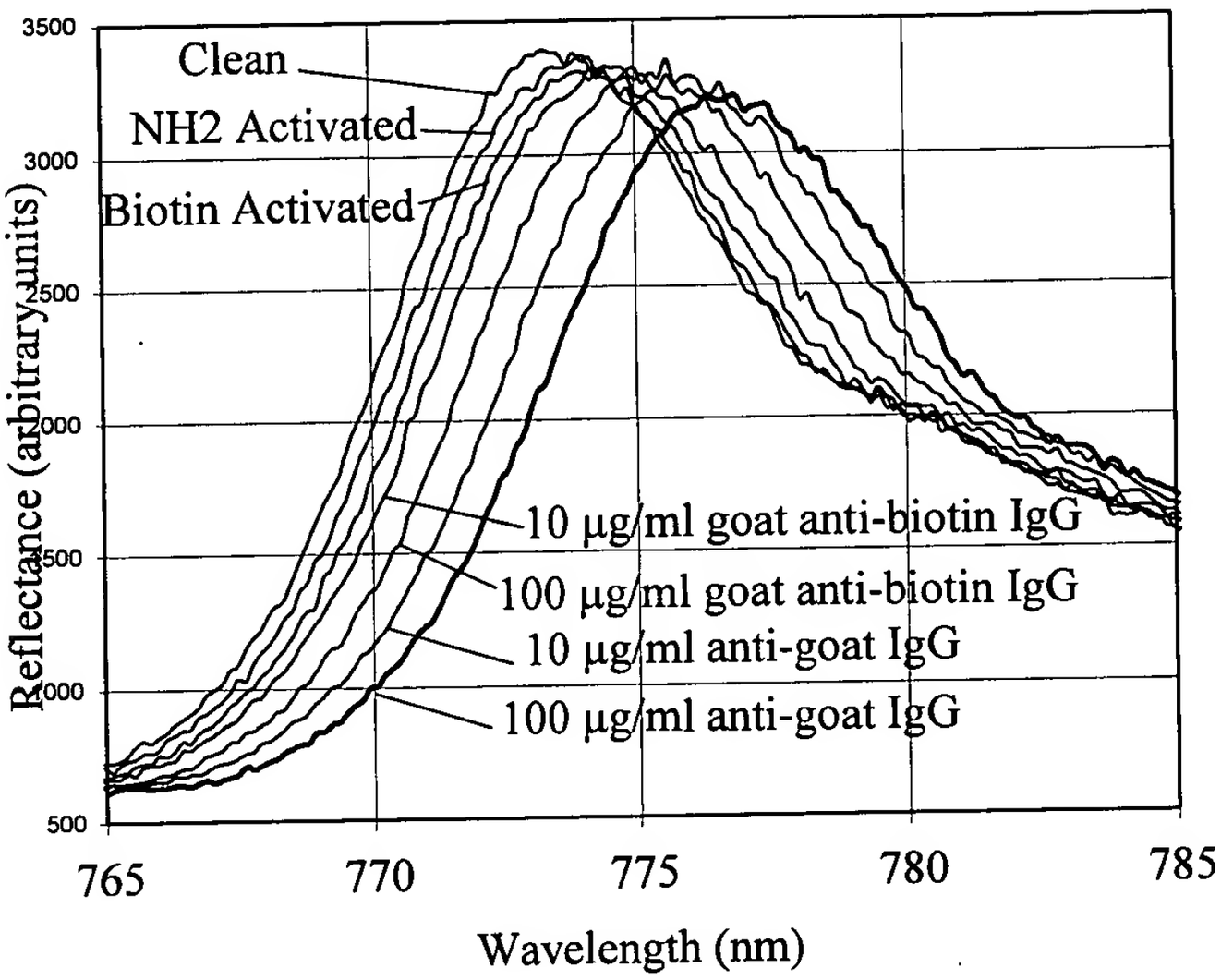


Figure 42A

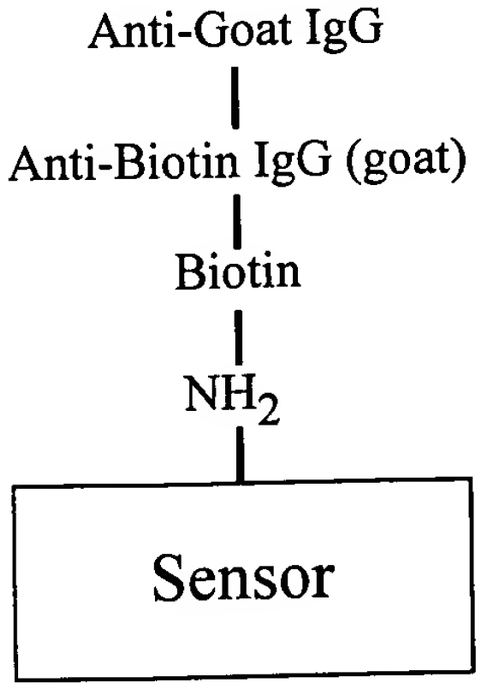


Figure 42B

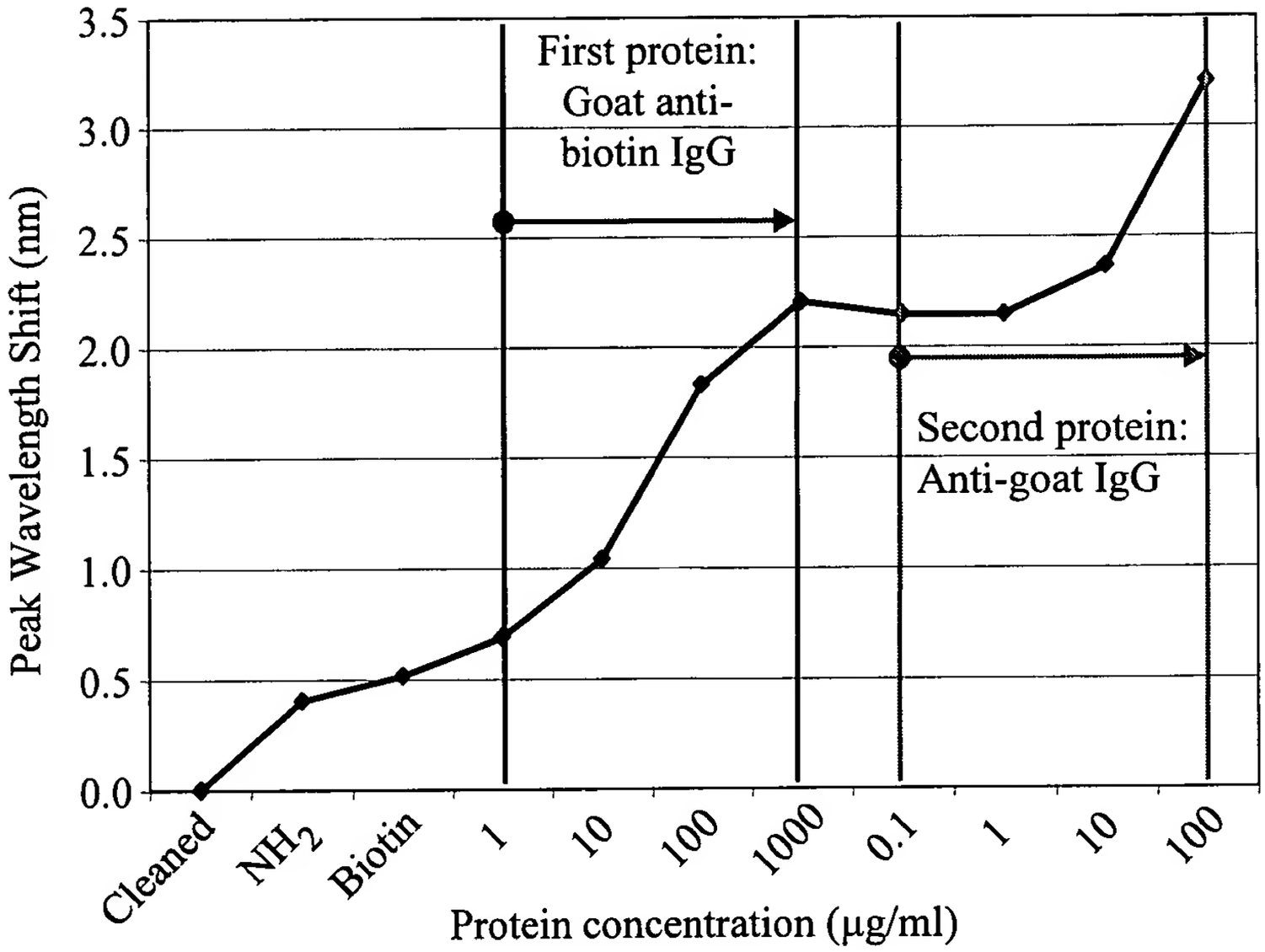


Figure 43A

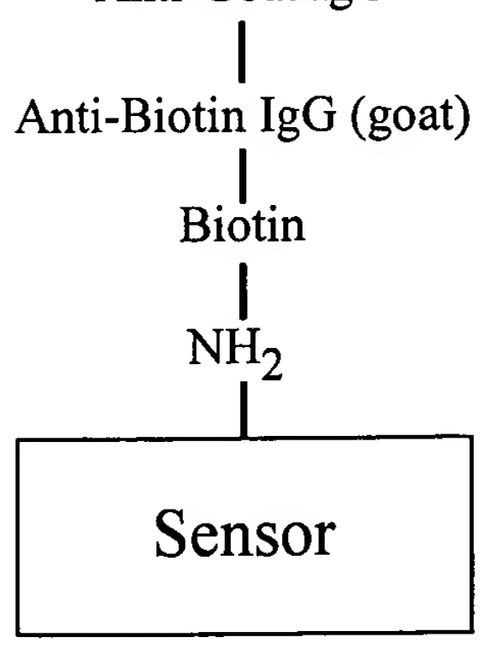


Figure 43B

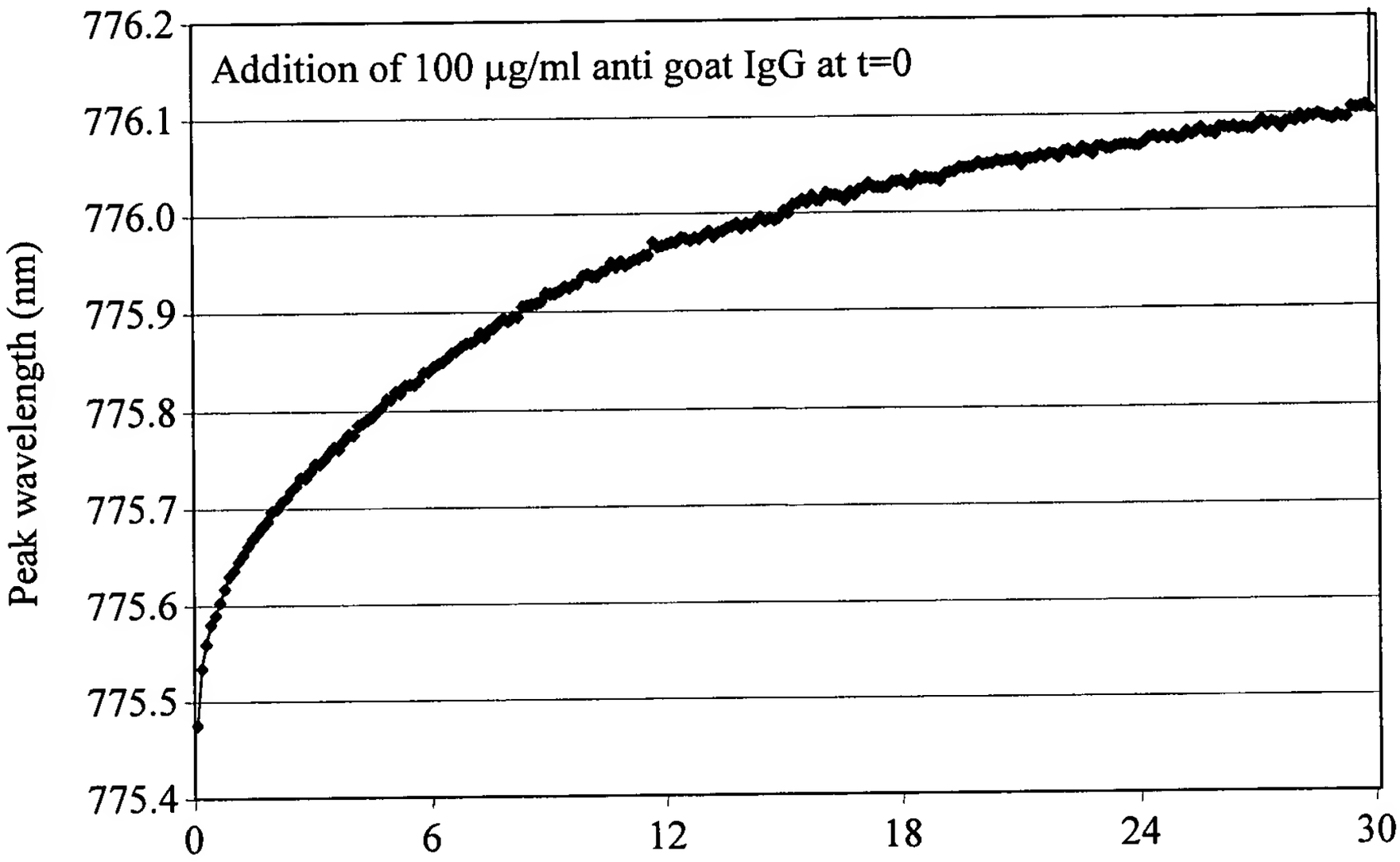


Figure 44A

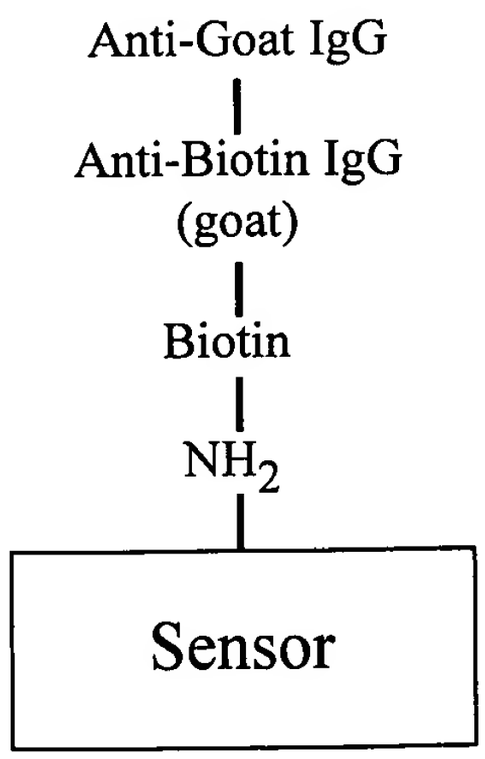


Figure 44B

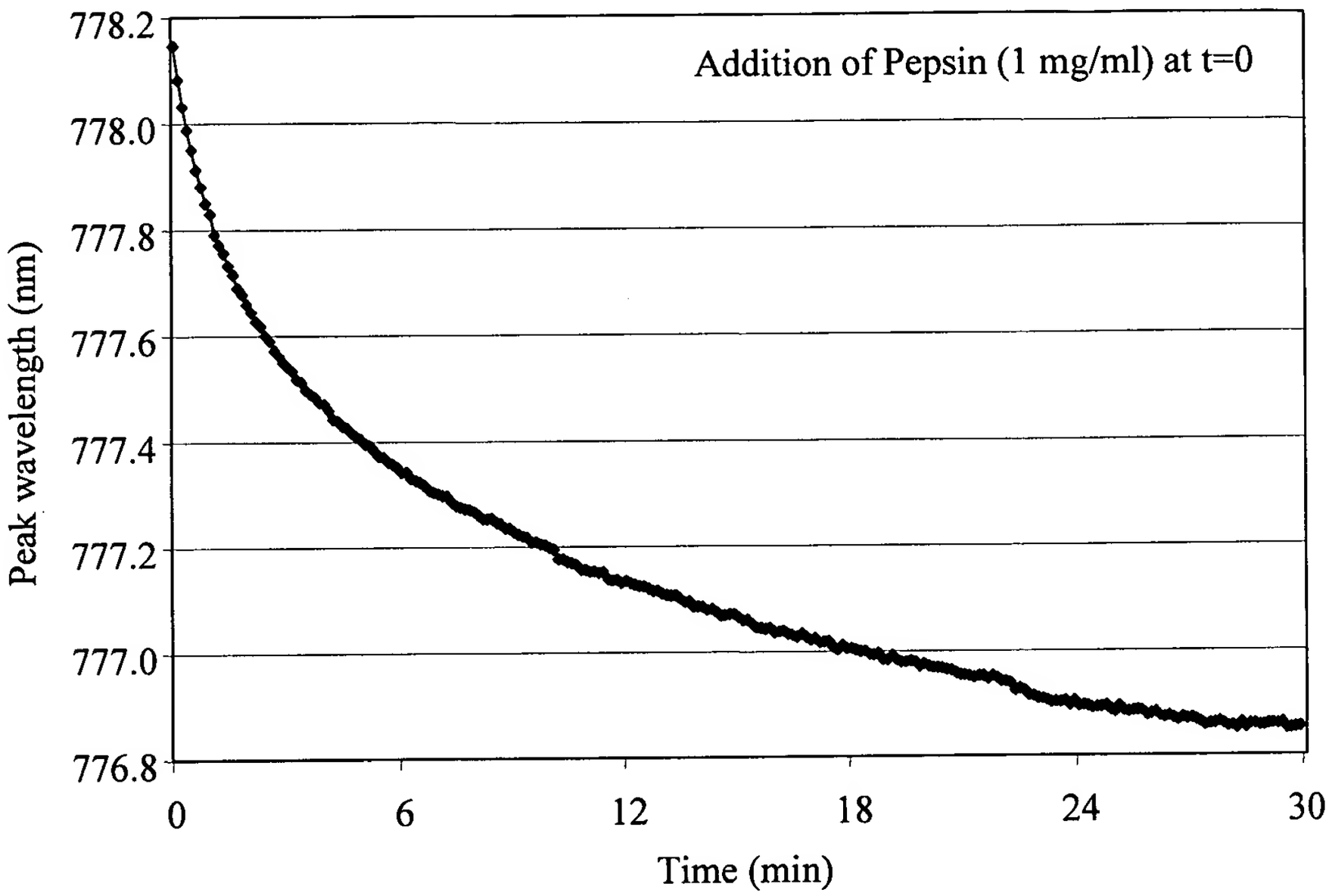


Figure 45A

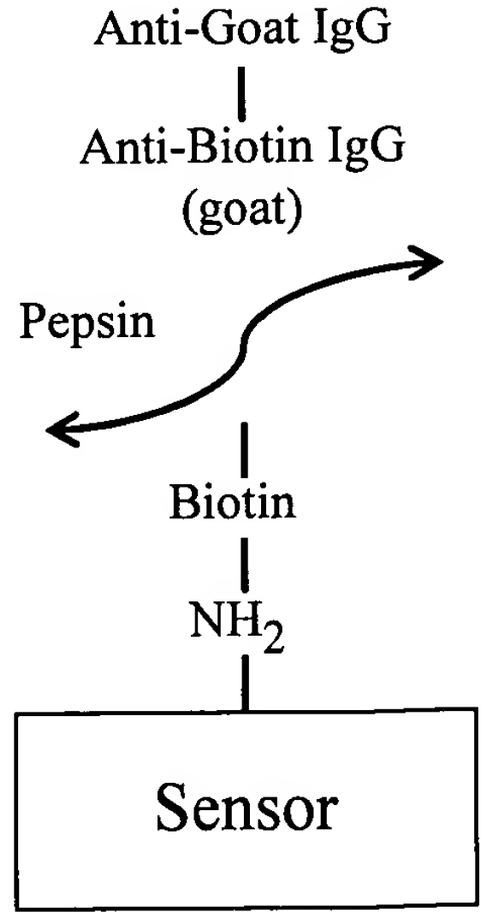
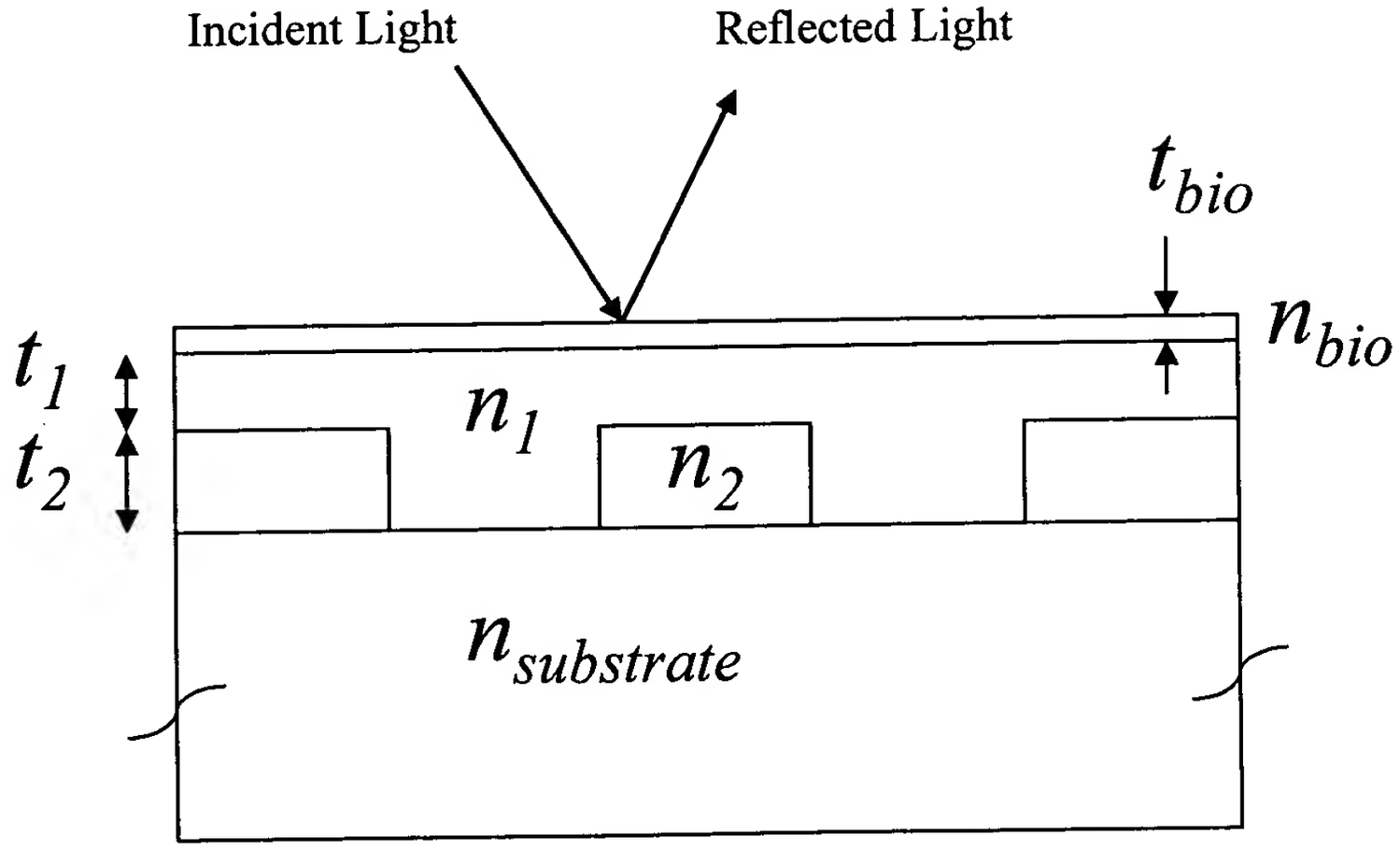


Figure 45B



Material 1 = Electrical Insulator (photoresist, epoxy, glass)
Material 2 = Indium tin oxide conductor
Substrate = Glass

Figure 48